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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,235	12/19/2005	Alex Cimpoia	SHIRE-518	5723
23599	7590	03/31/2008		
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			EXAMINER ARIANI, KADE	
			ART UNIT 1651	PAPER NUMBER
			MAIL DATE 03/31/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/535,235

Applicant(s)

CIMPOIA ET AL.

Examiner

KADE ARIANI

Art Unit

1651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☒ Claim(s) 1 and 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 7/15/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claims 1-24 are pending in this application and were examined on their merits.

Claim Objection

Claims 1 and 12 is objected to because of the following informalities:

The recitation –subjecting a compounds-- in claims 1 and 12 is incorrect.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cimpoia et al. (WO 00/47759) in view of Janes et al. (in IDS, J. Org. Chem., 1999, Vol. 64, p.9019-9029) and further in view of Ferrero et al. (Monatshefte für Chemie, 2000, Vol. 131, p.585-616).

Claims 1-11 are drawn to a process comprising the steps of a) subjecting a compound of formula II to an enzymatic resolution in the presence of pig liver esterase or porcine pancreatic lipase, b) recovering compound of formula I, wherein R₁ is C₁₋₁₂

alkyl, and R_2 is CO-C₆₋₁₂ aryl, wherein R_1 is methyl and R_2 is benzoyl, the process further comprising a) replacing the functional group at position C4 of the compound of formula I to produce a compound of formula V, b) removing the R_2 group, c) recovering a compound of formula VI, wherein B is purine (or pyrimidine) base, wherein R_3, R_4, R_5, R_6, R_7 , and R_8 are H, and further recovering a compound of formula VII.

Claims 12-24 are drawn to a process for producing a compound of formula III comprising the steps of a) subjecting a compound of formula IV to an enzymatic resolution in the presence of lipase, b) recovering compound of formula III, wherein R_{11} is C₁₋₁₂ alkyl and R_{12} is a hydroxyl protecting group CO-C₆₋₁₂ aryl, wherein R_{11} is methyl and R_{12} is benzoyl, wherein the enzyme is *Candida Antarctica* lipase A, *C. Antarctica* lipase B, *C. Lypolitica* lipase, *R. Miehei* lipase, the process further comprising a) replacing the functional group at position C4 of the compound of formula III to produce a compound of formula VIII, b) removing the R_{12} group, c) recovering a compound of formula IX, wherein B is purine (or pyrimidine) base, wherein R_3, R_4, R_5, R_6, R_7 , and R_8 are H, and further recovering a compound of formula X.

Cimpoia et al. teach a process comprising the steps of a) subjecting a dioxolane compound (formula II, formula IV) to an enzymatic resolution in the presence of horse liver esterase and various lipases, b) recovering the resulted compound, wherein R_1 is C₁₋₁₂ alkyl, and R_2 is CO-C₆₋₁₂ aryl, wherein R_1 is methyl and R_2 is benzoyl (wherein R_{11} is C₁₋₁₂ alkyl and R_{12} is a hydroxyl protecting group CO-C₆₋₁₂ aryl, wherein R_{11} is methyl and R_{12} is benzoyl), the process further comprising a) replacing the functional group at position C4 of the compound, removing the R_2 group (R_{12} group), recovering a compound of (formula VI, formula IX) wherein B is purine (or pyrimidine) base, wherein

R₃, R₄, R₅, R₆, R₇, and R₈ are H, and further recovering the compound of (formula VII , formula X) (see Abstract, page 4, page 7 2nd-4th paragraphs, page 8 2nd paragraph, page 11 2nd and 3rd paragraphs).

Cimpoia et al. further teach modifications and variations of the present invention including but not limited to selection of enzymes and optimization of reaction conditions will be obvious (page 68 end paragraph).

Cimpoia et al. do not teach pig liver esterase, porcine pancreatic lipase, *Candida Antarctica* lipase A, *C. Antarctica* lipase B, *C. Lypolitica* lipase, and *R. Miehei* lipase. However, Janes et al. teach *Antarctica* lipase A, *C. Lypolitica* lipase, *R. Miehei* lipase (p.9022, Table 1.) Furthermore Ferrero et al. teach *Antarctica* lipase B is one of the enzymes commonly uses in biocatalytic processes (p.586 Table 1.).

Janes et al. further teach dioxolane nucleosides are powerful antiviral and anticancer drugs. Janes et al. further teach the commercial availability, relatively low cost, and tolerance for a wide class of substrates make hydrolytic enzymes attractive biocatalysts (Abstract, and p.9020 2nd column 2nd paragraph).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the process as taught by Cimpoia et al. by substituting the enzymes with the esterase and lipases as taught by Janes et al. and Ferrero et al. to provide a process for producing dioxolane nucleoside analogues. The claims would have been obvious because substitution of one known element (lipase) for another would have yielded the predictable results to one of ordinary skill in the art at the time the invention was made.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kade Ariani whose telephone number is (571) 272-6083. The examiner can normally be reached on 9:00 am to 5:30 pm EST Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon B Lankford Jr/
Primary Examiner, Art Unit 1651

Kade Ariani
Examiner
Art Unit 1651